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ACTIVE LOCAL DIMMING ON DISPLAY BY MAGNET OPTICAL SHUTTER

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Active Local Dimming on Display by Magnet Optical Shutter

Abstract

This invention is to produce true blacks by selectively turning off areas of the backlight behind black areas in scenes by enhancing the aspect of LED LCD performance via local dimming on the display screen that should be dark and keep bright the parts of the screen to be bright through active magnet optical shutter, which can obtain high contrast ratio.

Background

The traditional local dimming approach is required to have driver IC to control the channels for local dimming on the display, and it will need to have many driver ICs to control the channels with many local dimming zones.

The prior art local dimming mechanism needs to use direct-lit LED backlighting, and LCD module becomes thicker compared to edge-lit backlight.

Invention Description

The magnetic switch-on zones will let LED light pass through the display panel, and the non-magnetic switch-on zones are for local dimming zones as shown in Figure 1.

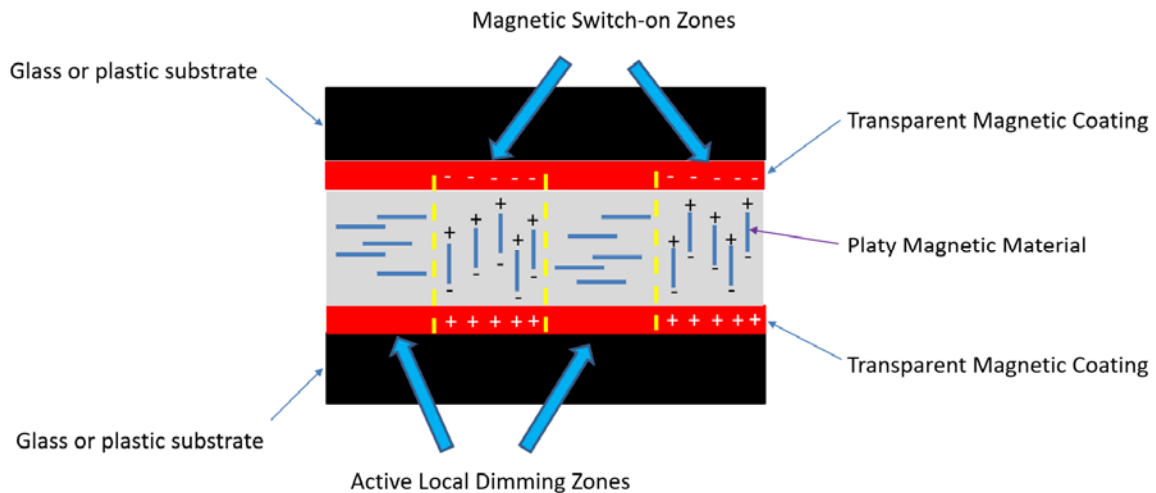


Figure 1. Active Magnet Optical Shutter Mechanism

Advantages

- The traditional local dimming is unable to achieve pixel-by-pixel local dimming on the display.
- Develop and enhance the aspect of LED LCD performance by local dimming the parts of the screen that should be dark and keeping brightness in the parts of the screen that should be bright through magnet optical shutter, which can obtain high contrast ratio.
- The traditional local dimming technique requires many driver ICs to control the channels in order to have many local dimming zones, which is costly.
- The traditional local dimming mechanism needs to use direct-lit LED backlighting to control local dimming, and LCD module becomes thicker compared to edge-lit backlight.
- Active local dimming of this invention on display is controlled by actively drove magnet optical shutter.
- Provide a thin active local dimming solution.
- Achieve pixel-by-pixel local dimming for high-dynamic-range liquid crystal displays and obtain higher contrast ratio.

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